Amendments to the Claims:

1. (Currently Amended) A computer assisted method comprising:

measuring activity of one or more internal voxels of a brain of a subject, wherein the measuring activity is performed by an apparatus comprising an fMRI;

employing computer executable logic that takes the measured brain activity and determines one or more members of the group consisting of: a) what next stimulus to communicate to the subject, b) what next behavior to instruct the subject to perform, c) when ~~a~~ the subject is to be exposed to a next stimulus, d) when the subject is to perform a next behavior, e) one or more activity metrics computed from the measured activity, f) a spatial pattern computed from the measured activity, g) a location of a region of interest computed from the measured activity, h) performance targets that when ~~a~~ the subject is to achieve computed from the measured activity, i) a performance measure of when ~~a~~ the subject's success computed from the measured activity and, j) ~~a~~ the subject's position relative to an activity measurement instrument; and

employing a computer to communicate ~~communicating~~ information based on the one or more determinations to the subject in less than 10 seconds from ~~substantially real time relative to~~ when the activity is measured.

2. (Cancelled)

3. (Cancelled)

4. (Original) A method according to claim 1 wherein the determinations are made in less than 1 second relative to when the activity is measured.

5. (Original) A method according to claim 1 wherein the determinations are made in less than 0.5 second relative to when the activity is measured.

6. (Currently Amended) A method according to claim 1 wherein the information is determined while the ~~instrument~~ apparatus used for measurement remains positioned about the subject.

7. (Currently Amended) A method according to claim 1 wherein the ~~activity measurements are made using an~~ apparatus is capable of taking measurements from one or more internal voxels without substantial contamination of ~~the~~ measurements by activity from regions intervening between the internal voxels being measured and ~~where~~ wherein the ~~measurement~~ apparatus collects the ~~data~~ activity measurements.

8. (Currently Amended) A method according to claim 1 wherein activity measurements are made from at least 100 separate internal voxels~~, and these measurements are made~~ at a rate of at least once every five seconds.

9. (Currently Amended) A method according to claim 1 wherein activity measurements are made from a set of separate internal voxels corresponding to a scan volume including the entire brain.

10. (Currently Amended) A method according to claim 1 wherein the ~~size of the~~ internal voxels have a total three dimensional volume of 5x5x5cm or less.

11. (Currently Amended) A method according to claim 1 wherein the ~~size of the~~ internal voxels have a total three dimensional volume of 1x1x1cm or less.

12. (Original) A method according to claim 1 wherein the method further comprises selecting one or more of the internal voxels to correspond to a region of interest for the subject and using the selected internal voxels of the region of interest to make the one or more determinations.

13. (Currently Amended) A method according to claim 12 wherein the region of interest is selected from the group consisting of ~~the regions listed in Figure 14, including the~~ substantia nigra, subthalamic nucleus, nucleus accumbens, locus coeruleus, periaqueductal gray matter, nucleus raphe dorsalis, nucleus basalis of Meynert, dorsolateral pre-frontal cortex, and anterior pre-frontal cortex.

14. (Currently Amended) A method according to claim 12 wherein the region of interest has a primary function of releasing a neuromodulatory substance, where the neuromodulatory substance is selected from the group consisting of: dopamine, acetyl choline, noradrenaline, serotonin, ~~an~~ and endogenous opiate.

15. (Currently Amended) A method according to claim 12 wherein the subject has one or more of the following conditions: Parkinson's disease, Alzheimer's disease, attention & attention deficit disorder, depression, substance abuse ~~&~~ and addiction, or schizophrenia.

16. (Currently Amended) A method according to claim 1 wherein the information is communicated by a manner selected from the group consisting of providing audio to the subject, providing tactile stimuli to the subject, providing a smell to the subject, and displaying an image to the subject.

17. (Original) A method according to claim 1 wherein the information communicated is an instruction to the subject.

18. (Currently Amended) A method according to claim 17 wherein the instruction is a text or iconic indication denoting an action that ~~a~~ and subject is to perform.

19. (Original) A method according to claim 17 wherein the instruction identifies a task to be performed by the subject.

20. (Currently Amended) A method according to claim 17 wherein the instruction is determined by the computer executable logic.

21. (Currently Amended) A method according to claim 20 wherein the instruction communicated is selected from a set of instructions stored in memory, ~~the~~ wherein selection ~~being~~ is based upon the ~~brain~~ activity measured.

22. (Original) A method according to claim 1 wherein some of the information communicated to the subject is material to be learned.

23. (Currently Amended) ~~Computer executable software~~ A computer readable medium comprising a computer executable instruction for guiding brain activity training comprising:

logic which takes data corresponding to activity measurements of one or more internal voxels of a brain of a subject, wherein said activity measurements are performed by fMRI, and determines one or more members of the group consisting of: a) what next stimulus to communicate to the subject, b) what next behavior to instruct the subject to perform, c) when ~~a~~ the subject is to be exposed to ~~a~~ the next stimulus, d) when the subject is to perform a next behavior, e) one or more activity metrics computed from the measured activity, f) a spatial pattern computed from the measured activity, g) a location of a region of interest computed from the measured activity, h) performance targets that ~~a~~ the subject is to achieve computed from the measured activity, i) a performance measure of ~~a~~ the subject's success computed from the measured activity, and j) ~~a~~ the subject's position relative to an activity measurement instrument; and

logic for communicating information based on the determinations to the subject in ~~substantially real time relative to~~ less than 10 seconds from when the activity is measured.

24. (Cancelled)

25. (Currently Amended) A method comprising:

(a) measuring activity of one or more internal voxels of a brain of a subject, wherein the measuring activity is performed by fMRI;

(b) communicating instructions to ~~a~~ the subject derived from that measured activity in substantially real time relative to ~~when the behavior is performed~~ when the measuring activity, wherein the logic instructions are communicated to the subject by employing a computer executable medium; and

(c) having the subject perform a behavior in response to receiving the instructions.

26. (Cancelled)

27. (Currently Amended) A method according to claim 25 wherein ~~measurements are~~ the measuring activity is made from at least 100 ~~separate~~ internal voxels.

28. (Currently Amended) A method according to claim 25 wherein the instructions are derived through a computer executable logic process of selecting from a set of possible instructions based upon the ~~brain activity~~ measured activity.

29. (Currently Amended) A method according to claim ~~29~~ 28, wherein the computer executable logic is ~~emplyed~~ employed to cause the information to be communicated to the subject.

~~31~~ 30. (Currently Amended) ~~Computer executable software, the software~~ A computer readable medium comprising a computer executable instruction wherein the computer executable instruction ~~comprising~~ comprises:

logic for taking activity measurements by a fMRI of one or more localized brain regions of a subject as a behavior is performed; and

logic for communicating information to the subject based on ~~the measured brain activity~~ activity measurements in ~~substantially real time relative to~~ less than 10 seconds from when the behavior is performed;

wherein the ~~logic~~ logics ~~takes~~ take new activity measurements as they are received and ~~communicates~~ communicate new information based on the new activity measurements.